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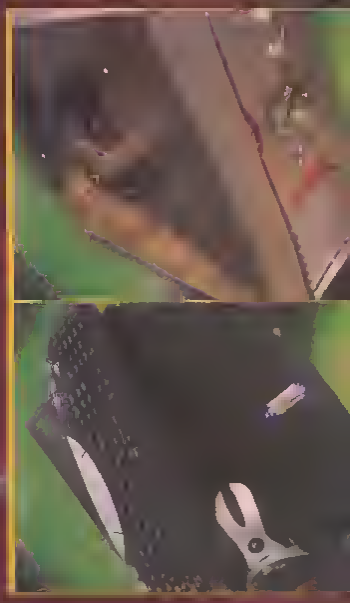

Review of

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A-Power's AP-Ultra Multimedia System

64-bits Athlon NCIX Entra7000 System

Hardware Survey, Employment Ads and Events Calendar Inside

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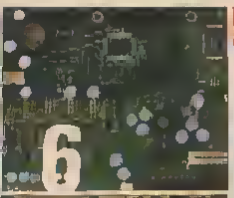

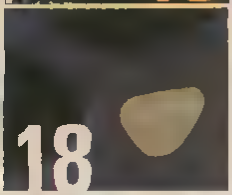

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Back to the Future

It's back to the future for technology these days Everywhere I look, it seems that the future of technology – and the PC industry, in particular – is going back to the ideas of a decade or more ago

And you'll see firm evidence of that in this issue From the Silent PC Upgrade Kit (which you have a chance to win in our competition by visiting the Performance PC Canada Web site) to our hardware reviews, users are once again taking their future in their own hands and building their own PCs – or upgrading the ones they already have.

Over the past two months, I have seen many signs of this trend throughout the computer industry as I traveled to England (where Dell and EMC were unveiling some innovative ideas on disaster recover and business continuity), to Austin, Texas (to see Dell Computer), to New York (where Nokia was unveiling mobile phones that had as much computing power as the desktop systems of a decade ago) to Las Vegas (for the Comdex trade show, which is looking increasingly like the shows of the late 1980s and early 1990s)

The real key to all of this is that the few companies that dominated the industry throughout most of the 1990s are beginning to face challenges – just as they did in the last 1980s and early 1990s Microsoft, for example, is facing strong challenges to the domination of Windows from Linu Intel is taking on an ever-more capable line of products fro AMD And a host of highly configurable products fro many different hardware vendors are challenging Dell, H and IBM on the PC hardware side

That was probably the most interesting thing about Comde this year Most of the innovation came from companies wh were not front-runners Dozens of small Asian technologie companies, for example, were showing off all kinds of fascina ing USB based products, including USB watches Thes watches look like standard watches, except that they have short, slim-line USB cable clipped into the strap of the watch

The watch acts a USB RAM drive drive – with capacitie in the kinds of quantities that you normally see in USB RAM drives – except that it's also a watch The real problem wi USB RAM drives up to this point is that you've always ha to remember to bring them with you By building it into watch, you have the capacity in a device that you're likely be wearing anyway

And it's just the kind of fun, quirky little product that wa the mainstay of Comdex when it became overbig, bloate and impossible to enjoy a few years ago Now, the line-u are way down (along with attendance), but the show seem to have gone back to its roots – with fun and innovativ products taking the main stage and showbiz takin something of a back seat

Nordel 2U SCSI Xeon - City Computer Systems High-Density 2.4 GHz Managed Dual Xeon Server

The Nordel 2U Dual Xeon rack optimised server is a strong configuration from a ocal company that stands up well ıgainst the competition. A very lifferent system from last month's ıcixPC Gamer box The Nordel is built or utmost reliability, while providing he raw power needed for the never-nding workload of a high-end server.

The chassis is fully-featured, ıpporting up to six hot-swap 2 5" SCSI drives, in addition to the installed CD-ROM and floppy drives Video nd USB are available at both the front nd back for easy maintenance without KVM. PS/2 keyboard and mouse orts are found only at the back. One andy feature for working in high-ensity rack mount environment is the ystem ID button, which enables a blue LED that is visible from the rear of the nachine, which can be a great help vhen you re trying to figure out which etwork cable you're supposed to e pulling, and which ones you hould leave alone. The redundant 00W power supply is this system's iller feature, providing last-ditch edundancy against power failures, urges, and accidental unplugging The ne major downfall of the redundancy that the system's four fans produce nough noise to quarantine it to a erver room or hosting facility. Vorking in the same office as the erver was just too distracting.

Getting into the system is easy notigh, thanks to the trend towards ool-free maintenance. Not too easy, nough - thanks to the built-in intrusion etection system, which can be ombined with the locking faceplate to eep your data secure from physical tacks *Inside*, the system is neat and ganised Essential for maintaining gh-availability servers The server ard has LEDs that indicate specific rdware failures for rapid detection and repair, and includes the Intel Server Management remote management BIOS You can also install tools on a hard drive partition to extend the remote management functionality The SE7501wv2 has maintenance and usability features comparable to IBM's xSeries 345 and exceeding Dell's PowerEdge 2650 servers, which lack certain high-availability diagnostics To say the least, I was very impressed with what at first glance appeared to be a rack-mount clone

The BIOS supports login either via Serial-over-LAN or dial up modem, so that you can always gain access to and reboot your system, short of a complete network (and telephone) outage The management interface allows for monitoring and adjustment of over 60 parameters, and while it won't give you full GUI access to Windows XP it will provide access to the Windows and Linux command prompts Continuing along the feature-complete trend, the BIOS provides an SNMPv3 service for centralised monitoring of server health independent of the host OS, and built-in facilities to automatically email or page the administrator in the event of any trouble Never again will you be woken by an angry phone call at 3am requesting that you press a reset button 15 kilometres away

Not for your grandmother's gardening blog, this system has the capacity to deal with high-end e-Commerce and hosting demands or just about anything else you want to throw at it (except 3D games - it's industry-standard 8MB Rage XL would give little joy to any gamer since 1996) With the Xeon's HyperThreading the dual processors in this system each appear as two logical processors, effectively creating a quad-processor system In order to take full advantage of this the running processes must be thread-optimised, performing somewhat varied tasks and ideally sharing as much of the 512K on-chip cache as possible to minimise deferral to RAM In the Windows world, this means running XP or 2003, and being very careful about what processes you allow to idle on the system IIS, Exchange Server and SQL Server should all see at least 10% performance gains; greater if you opt for faster processors. On Linux, Apache 2 0, MySQL 4 and PostgreSQL 7 4, and the upcoming 2.6 kernel should see significant

Continue on page 14

SPECIFICATIONS

Motherboard and CPU
Intel SE7501wv2 Server Board
2 x Intel 2 4GHz Xeon Processors with Hyper Threading Technology 512KB L2 On Chip Cache 533 MHz system bus Six Triple peer PCI/PCI X slots at 66 or 100 MHz

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Review of A-Power's AP-Ultra Multimedia System

SYSTEM SPECIFICATIONS:

CPU Processor:	Intel Pentium 4 2.66 Ghz with 800Mhz FSB
Motherboard:	Asus P4-P800
Memory:	Kingston ValueRam PC3200 512Meg
Hard Drive:	Seagate 120 GB 7200 rpm 2Meg Cache
Video:	Radeon 9600 Pro 128Meg
CD-Rom:	LG 52x/32x/52x CD-R/RW burner
Sound/Network:	Integrated On Motherboard
Keyboard/Mouse:	Microsoft Multimedia Keyboard with Optical Mouse
Case:	17" Raidmax Scorpio 868 with 420W Power Supply
Misc:	Floppy
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Price:	$1075 + tax
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Edwin Tam

When shopping for a new PC, the market now has a wide variety of choices from, as low as $300 to $1,500. For the low end systems, while they might be easy on the wallet, they are not suitable for any intensive usage besides web surfing and word processing. To hit the rock bottom price, system builders have to use components such as a motherboard with integrated CPU and generic power supply. These systems are useless in the sense that they provide limited or no upgrade path if demand on usage and functionality of the system increase. I did some quick research on current system configurations, and decided to do a mid-range multimedia system for this review.

A-power was kind enough to send us one of their custom build systems (AP-Ultra) for testing. The system came equipped with a Pentium4 2.6C processor with Asus P4P800 motherboard and Radeon 9600 Pro graphics card all wrapped in a Raidmax Scorpio 868 case with 420W Dual Fan power supply. This is good because the Pentium 4 is a very power hungry CPU, powering it with a generic psu might work fine, but it will most likely fail down the road when you decide to add on more peripherals. The appearance of the Raidmax case doesn't appeal to me. Beyond the look is a sturdy built system case. It has a side window with 1 led fan and 2 rear exhaust fans to vent the hot air out of the system. When I turned the power on, I was surprised how quiet the system was. Compared to my own system with 3 80mm fans, this Raidmax case is virtually silent.

The Pentium 4 processor is equipped with a technology called HyperThreading. When enabled and supported by the motherboard bios, it makes the CPU more efficient by handling multiple process simultaneously, giving it a 15-20% performance boost. The Asus motherboard has HyperThreading turned on by default. Benchmarking the system using SiSoft Sandra benchmark suite gives the following result on the CPU Arithmetic Benchamrk:

ALU: 7927 MIPS
FPU: 3235 MFLOPS
SSE2: 5794 MFLOPS

These numbers are about 20% ALU / 60%FPU-SSE2 higher than a comparable system on the reference list and about 10% higher than a comparable AMD system. Another test run with hyperthreading turned off showed score similar to systems on the reference list.

FutureMark 3DMark 2003 is a benchmarking tool that tests the system and video card's 3D capability. This system with HT turned on, running the benchmark with no anti-aliasing and optimal texture filtering scored 3367 3dmark, which is also typical among similar speed systems with a Radeon 9600 pro configuration.

Halo: Combat Evolved (version 1.02) is the famous Xbox Game that has been ported over to the PC. It is by far one of the most system demanding games to date. Running its build-in benchmark program, the system scored approximately 27fps @ 1024x768 setting with all the details at max. While this might sound low, keep in mind that Halo is probably the most extreme case in terms of slow performance. And the top end graphics card costing twice as much as the Radeon 9600 Pro (~$450-$500) will only score 25-30% more fps.

For the enthusiast, this system overclocks like you would expect. Turning FSB:Ram ratio to 5:4 and with the voltage bump to 1.6V, I was able to run the system stable up to 240x13 = 3.13 GHz. At higher speed, the system was able to boot up Windows XP and run a few benchmarks, but Prime95 returned errors. I was able to boot into windows with speed as high as 255x13 = 3.32 GHz. (Disclaimer: Overclocking will void your system's warranty with A-power)

In conclusion, with the AP-Ultra, you get a good quality

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2X 80GB 7200rpm IDE HDD
4U Rackmount Case w/460W

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2.4GHz $1700

Code 4U1

Nordel 1U ATA Xeon

Intel se7501wv2 Server Board
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Nordel 2U SCSI RAID Xeon

HOT SWAP

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1.44 & CD-ROM Combo Drive
Hot Swap
Onboard Dual GB Ethernet
Adaptec 2010s SCSI RAID
2 X 36GB 10k SCSI Drives
Intel 2U rackmount server chassis
460 Watt power supply

2x Xeon
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2.4GHz $5500
2.8GHz $5630
2.8GHz $6410
3.06GHz $7400

Code 2U2

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1GB registered ECC DDR
1.44 & CD-ROM Drive
Onboard ATI Video
Onboard Dual Lan 1x GB
2 X SATA 80GB 7200rpm RAID
Intel SC 5250 server chassis
460 Watt power supply

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2.0GHz $3375
2.4GHz $3515
2.8GHz $3880
2.8GHz $4445
3.06GHz $5550

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Nordel 4U ATA Xeon

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1GB registered ECC DDR
Black 1.44 & CD-ROM Drive
Onboard ATI Video
Onboard Dual GB Ethernet
Onboard IDE RAID controller
2 X 80GB 7200rpm IDE HDD
4U rackmount server chassis
460 Watt power supply

2x Xeon
2.0GHz $3360
2.4GHz $3530
2.8GHz $3885
2.4GHz $4461
3.06GHz $5565

Code 4U2

Nordel 1U SCSI Xeon

Intel se7501wv2 Server Board
2 X Intel Xeon processors
1GB registered ECC DDR
1.44 & CD-ROM Combo drive
Onboard ATI Video
Onboard Dual GB Ethernet
Onboard dual channel SCSI
2 X 18GB 10k SCSI drives
Intel 1U rackmount server chassis
350 Watt power supply

2x Xeon
2.0GHz $4755
2.4GHz $4805
2.8GHz $5320
2.8GHz $5705
3.06GHz $6075

Code 1U3

Nordel 2U SCSI Xeon

HOT SWAP

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1.44 & CD ROM Combo drive
HOT SWAP
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2x Xeon
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Code 4U3

Options

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3com 3c905tx Ethernet card	$65

Software

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3.06GHz $5655

Code 4U5

64-bits on Your Desktop

by David Juhasz

After 18 months of hype, speculation and doom saying, the 64-bit Athlon has finally made it to the desktop. With this new chip, NCIX has built the NCIX Entra 7000, a truly high end desktop computer.

So what's the Deal with 64-bits?

64-bit CPU's have been part of the high-end server market for years, and 64-bit game consoles have been and gone, so why is a 64-bit desktop important? Well the answer isn't an easy one, but AMD is banking on it being the next big thing in desktop computers.

Intel introduced the first 32-bit processor for the PC with the 386 way back in 1986, so 32-bit processing has been the standard for almost twenty years now. Twenty years is, as you probably know, an insanely long time in the computer world, roughly equivalent to say, a million years in the real world. We're talking about the dinosaurs: the Mac Plus, the Commodore Amiga, DOS, real Stone Age. So it's amazing that the 32-bit processor has held on as long as it has. It's not quite as astonishing though, when you realize that every piece of software written in those 20 years for the PC has been made to run on a 32-bit CPU, and every one of those programs will need to be rewritten (or at least re-complied) to run on a 64-bit computer.

So now AMD has come along and said "the time for 64-bits on your desktop has come". But they also realize that almost nobody is going to buy a pure 64-bit computer if they can't keep their old software, and almost nobody is going to write software for a computer that nobody buys. So how do you solve this dilemma? AMD created a 64-bit processor that can also run as a 32-bit processor so you don't have to chuck all your old software out the window. AMD launched their first 32-bit/64-bit hybrid, the Opteron, into the server market earlier this year, an area where the advantages of 64-bit are much more evident. The desktop market may be a much harder sell.

So why has Intel claimed that the PC market is not yet ready for 64-bit computing? Well, to understand the problems with selling 64-bit on the desktop, you first need to know what 64-bit computing does. At the most basic level, there are two major advantages to a 64-bit processor:

1) It can use more then 4 GB of memory,

2) It can store very large integers in a single 64-bit register.

Great! But so what? It's pretty easy to see how more than 4 GB can benefit, the server industry, and the home user will need it eventually, but it's probably still going to be a few years until you'll need 4 GB on your home computer to run Microsoft Office, or even Unreal Tournament.

Being able to handle really, really big numbers may sounds impressive (or maybe not), but it is even harder to see the immediate advantage here. Huge numbers are useful for some scientific applications and for data encryption, which uses very large primes to encrypt data, and encryption is definitely a growth area, but for the vast majority of programs 64-bit integers aren't going to make any appreciable speed difference.

System Specifications

PRICE	$2,160.07 (Cdn) + Applicable Taxes
Case	Antec Sonata Quiet Chassis (ATX, Piano Black, 380W Truepower)
CPU	AMD Athlon 64 3200+ Processor (2000 MHz, S754, Retail Box)
Motherboard	Asus K8V Deluxe Athlon64 (S754, DDR, AGP8x, 5pci, SATA RAID, 1394, 1000LAN, onboard sound)
RAM	Kingston Hyperx 512mb Dual Channel Kit (PC3500, 2x256MB, DDR 433 MHz, 184pin)
Hard Drive	Seagate Barracuda Serial ATA 120GB (EIDE, 7200RPM, 9ms, 3.5IP, ATA V)
Floppy Disk	144mb Black 3.5in Floppy Drive
Video Card	ATI Radeon 9800 Pro (128mb, AGP, VGA, DVI-I, TV Out, Retail Box)
DVD-ROM	LG 16x black DVD-ROM (48x, CD ROM, IDE, UDMA33, Internal, OEM)
DVD Writer	LG GSA-4040B 4x Black DVD+-R/RW DVD-RAM Drive (CDRW IDE, 2MB, w/ Software, OEM)
Keyboard	Logitech Cordless MX Duo Mouse/Keyboard (Retail Box)
Warranty	PC Assembly and Testing
Contact Info.	www.ncix.com / 604-451-8[illegible]

One area where the new processor should allow some immediate gains in performance isn't directly linked to the jump from 32-bits to 64-bits. AMD has taken advantage of the shift to a new processor architecture and instruction set, by increasing the number of general purpose registers in the system from 8 to 16, another legacy of the early days of PC's that has never be updated. Software will need to be re-compiled to take advantage of the new registers, but it will need to be recompiled to use the 64-bit functions anyway. Having more registers makes it easier for the CPU to get the data it needs, when it needs it, which translates into software running faster.

As the mantra goes "If you build it, they will come", and undoubtedly, some day, there will be killer applications that will require a 64-bit processor to run. But it will take time for the applications to come. A version of Windows XP 64 that will take advantage of the 64-bit aspects of the Athlon 64 is in the beta stage of development, and due to be released in the first half of 2004. A 64-bit version of Unreal Tournament 2003 was supposed to hit shelves with the Athlon 64, but hasn't been released yet - and it would run in 64-bit Linux (SuSE has already released a 64-bit version of Linux) not Windows.

Until 64-bit applications do arrive, AMD is counting on people buying for the future, but that will be much easier to sell if the chip can compete in speed and price in the 32-bit arena. If the Athlon 64 is a solid 32-bit chip, then the 64-bit abilities become that extra bonus that may sway the consumer away from Intel's offerings.

So what can the Athlon-64 do for me now?

AMD has built new features into the Athlon 64 that don't require recompiling applications, or running in 64-bit mode. They've upped the number of steps in the pipeline from 10, in their Barton core, to 12 in the Athlon 64 core. The extra pipeline stages will allow them to crank up the clock speeds to keep competing with Intel's high clock speed chips. The size of both the L1 and L2 caches have been increased. The memory controller has been moved on to the chip from the Northbridge, allowing faster communication with the RAM. The processor and all motherboards that support it use Hypertransport technology to provide 3.2 GB/s, 2-way simultaneous communications between the processor and Northbridge. This allows plenty of bandwidth to talk to onboard components. The processor is manufactured using the new Silicon on Insulator (SOI) process, which allows lower voltages, less heat production, and ultimately higher clock speeds.

These additions mean that the Athlon 64 is no slouch in the 32-bit arena. Benchmarks have shown Athlon-64 3200+ (@2GHz) losing slightly to Intel's latest Pentium4 3.2 GHz Extreme Edition chip. This doesn't sound great for AMD, and it's not, but it's the closest they've come to competing with Intel's high-end desk top offerings. Hopefully with some

time to work out the kinks, the Athlon 64 line will be able to put up a serious fight against Intel - a la the glory days of the Athlon Thunderbird when AMD held the performance crown for a brief time It's also worth noting that while the Athlon 64 is rare, you can purchase it today, whereas the P4 EE chip hasn't hit stores as of this writing

If you've got the $620 that this chip demands, and you want to spend it on the best chip available, then you've got a difficult choice Is the Pentium 4 EE better, because it's got a slight edge in the performance category, or is the 64-bit potential of the Athlon 64 enough of a bonus to outweigh the slightly worse performance? Can you wait for the Pentium 4 EE to ship, or do you need a processor right now?

Due to problems getting a hold of an Athlon 64 in time to write this article, I didn't have a chance to look seriously into overclocking the chip, but the talk on the tech forums is that the Athlon 64 is multiplier locked, so it can't be overclocked easily If there is a way to unlock the chip, nobody has found it yet - or else they aren't talking This could be a big disappointment for AMD overclocking fans that loved the fact that AMD factory unlocked its Barton CPU, making it extremely easy to overclock.

The Refined Case, for the Discriminating Buyer

The **NCIX Entra 7000** from NCIX is wrapped up in a sexy, glossy black, nearly silent Antec Sonata case If you find windows that look in on the guts of your computer and high-power LED lighted fans gaudy, but are looking for something sexier then the ubiquitous grey PC case, then the Sonata is worth a serious look

The case has a simple clean design, with a glossy black finish A lockable door covers the "unsightly" drive bays and power and reset switches While the lock isn't going to dissuade a serious thief or vandal, it should be enough to keep your child from trying to put a grilled cheese sandwich in your CD-ROM, should the desire strike them, The lock may also be useful if the computer is destined for a public place, and you don't want foreign software loaded on it.

All of the hard drive bays, the CD/DVD-ROM/Writer bays, and even the floppy drive are mounted on sliding rails, which allow you to remove them without first tracking down your trusty multi-head screwdriver. The side panel of the case can also be opened with no tool except your hands as it's held closed with two knobbed screws, and door latch which can also be locked

The thing that speaks loudest for this case though is its silence The Sonata comes with a 120mm quiet exhaust fan, and a quiet power supply fan NCIX has also used a 120mm quiet fan for the CPU. The end result is that you can barely hear a thing when the computer is running If you're like me and used to a computer that's only slightly less noisy then an airplane taking off, then you may find the quiet sigh that this case produces a bit disconcerting at first.

The case isn't cheap, at $140, but the silence and classy styling are worth every penny. I have no doubt which case I'll be buying the next time I upgrade.

The Rest

The Asus K8V Deluxe board is a solid choice for this system Asus has a good name, they make good boards, and it uses the VIA K8T800 chipset, which is good because there have been some stability problems with the nForce 3 chipset for the Athlon 64. The board has a solid set of features, 8 USB 2 0 ports, firewire, AGP 8x, Gigabit Ethernet, onboard sound, as well as two RAID controllers, one in the Southbridge that supports IDE 133 (no RAID) and S/ATA with RAID, and a Promise controller that provides IDE 133 and S/ATA RAID

The Seagate Serial ATA 120 GB drive provides lots of storage space, and with the RAID capabilities built into the motherboard, all you need is a 2nd drive to satisfy your desires to build your own little RAID

The Kingston HyperX memory is great RAM at a good price. It's high quality, and won't let you down if you want to get aggressive with your memory timings. 512K of RAM may seem a bit light, but for most tasks it should prove more then sufficient

The ATI RADEON 9800 Pro video card is at the top of the video card heap right now, and in tandem with the ample processing power of the Athlon 64, you should see some great frame rates in even the most demanding of games.

The Creative Audigy sound card should serve you well for listening to music, playing games, or watching DVD's The motherboard's onboard sound chip sound quite good though, so I'd be tempted to drop the Audigy card from the mix, and save $130

NCIX has included both a LG DVD-ROM and an LG DVD-Writer (+-R/RW) so you can burn CD's, DVD's or whatever your heart may desire Once again, you should have no complaints.

If you read my review in last month's Performance PC "Review of "ncixPC Gamer XP 100" then you'll know that I'm not a huge fan of Logitech's wireless keyboard and mouse combination While they work fine: the keyboard is quite nice, the mouse works well and holds a charge well, there is an issue with the weight of the power cord for the base station pulling the cable out of the USB socket it connects to at the computer I also don't find the lack of cable mess a compelling enough reason to shell out the $140 that the combo requires

It's worth keeping in mind that the system doesn't include speakers or a monitor If you don't have these kicking around, make sure you budget for them as well.

Conclusion

I've been excited by the Athlon 64 for a while now, but it seems too early in the game to rush out and purchase the "Next Big Thing"™. At $616 you

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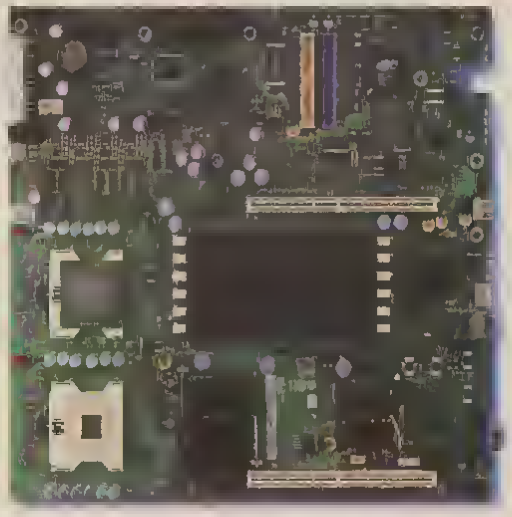
Nordel 2U SCSI Xeon

Continued from page 6



performance gains over their predecessors thanks to improvements across the board in thread support and scheduling

Like most servers, though, you'll want to target the machine's use. For web serving the two standard 36G 10k RPM drives configured in a RAID-1 mirror should be adequate. For more disk-intensive and relatively fragile database hosting, a six-drive RAID 5 configuration is ideal. For other functions like email, directory services, and security services, you'll want to do a careful evaluation of your needs. The dual Xeons and plenty of expansion capabilities make it ideal for the processor-intensive spam filtering tasks that are so important these days. The one application I can't see this being used for is storage and backup. Only the largest backup regimens would require such a powerful system and because of the limited space for backup devices those needing high-density storage would be best suited getting Fibre Channel NAS and a 4U or tower backup machine

The RAID controller works as advertised; while booting Windows Server 2003, I pulled one of the three hot swap drives included in our demo model Windows continued booting normally and after putting the drive back in the system proceeded to rebuild the array without any noticeable performance loss Of course doing that on a production system would cause some slowdown as the RAID rebuilt itself onto the hot spare drive. Everything in this system is redundant, and with the reliable Xeons and ECC-Registered SDRAM, the Nordel 2U lets you focus on core business. The price is very competitive with similar offerings from IBM, HP, and Dell City Computer Systems includes a one year parts and labour warrantee and the hardware itself is covered by a three year manufacturer's warrantee

Should you ever need to upgrade the system, the Intel E7501 chipset supports up to 12 GB of ECC-Registered DDR-266 RAM installed in pairs of up to 2GB chips (it ships with two 512MB chips installed) and will support at least dual-3 06 GHz Xeons (City Computers will ship with these installed for $2000 extra). The server board has two risers supporting up to three full-length and two low-profile PCI-X cards at 66 or 100 MHz, for all your storage and networking needs.

The price of this system definitely puts it out of reach of most, as has been said many times before high availability isn't cheap. However, having a redundant system that "just works" in any time-critical environment is invaluable Considering all the features, the Nordel 2U is a good value and easy to recommend to anyone in need of a reliable server solution that scales well ◗

AP-Ultra Multimedia System

Continued from page 8

Pentium 4 system with a mainstream graphics card that can handle most of today's games and run 3D/graphics applications While preliminary benchmarks from next generation games like Half-Life 2 and Doom 3 are not looking too optimistic, I have to stress again that top tier cards costing twice as much are not doing much better In my opinion, the Radeon 9600 series of cards probably provide the best value in the market right now

The only thing missing from this system is a DVD drive and a firewire port for those who are interested in digital video But these are relatively inexpensive upgrades Upgrading the Asus motherboard to the deluxe version will give the firewire port.

Some enthusiast might argue that it would be cheaper to buy parts and build the system on your own I think this is wrong in most cases, as the time you spend on building, price matching and the gas you spend driving around town for pick ups is probably not worth the effort In fact, at the time of this article, the cheapest I can custom build the same system would cost me $25 more, and that does not include the 1 year parts warranty covered by A power. If anything breaks down, you will have to pay shipping to send it directly back to the manufacturer. With a retail price of the tested system at $1075 + tax, the AP11-ULTRA + Radeon upgrade gives a fairly good bang for the buck. Add a good 17" or 19" monitor and you can have a speedy system for the take home price of just under $1500

Suggested Upgrades. Asus P4P800-D (Deluxe model with Firewire Port) - $30 & Adding a DVD Drive - $37 ◗

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Tiny Perfect Computer Flawed

Douglas Alder

Product	JVC Inter Link Notebook
Configuration	1Ghz Centrino Processor 40 GB hard drive 256 MB RAM
Pricing as Configured	$US 2 399 plus $199 for the battery
Dimensions	(W) 225mm (H) 29 5mm (D) 177mm or 8 58 in x 116 in x 6 97 in
Weight	199 lbs / 902 g (internal battery) 2 37 lbs/1075 g (weight with 6 hour battery)
Contact Info	www.dynamism com / 1-800 711 6227

Despite what all those spam emails have been telling you, sometimes smaller can be better. The JVC Victor Inter Link is an incredibly lightweight and small computer, yet it is capable of running Windows XP This computer is just under 2 pounds, just over than an inch thick and about the length and width of a DVD case and the thickness of two DVD cases A number of people who saw it while I was reviewing the unit asked what is it? No one thought it was a computer, it is so small, it resembles a portable DVD player

This 'sub notebook' computer is not for sale in North America. It is designed for the Japanese market, and is only available through companies that import Japanese-only models, such as www dynamism com

They do install an English version of Windows XP Pro All the documentation is in Japanese, so the manual may be excellent Unfortunately I can't tell because I cannot read Japanese

Hardware

At only 1 99 lbs, the tiny JVC Inter Link comes with a 1GHz Intel Centrino processor, 40GB hard drive and up to 768mb RAM and integrated Wi-Fi wireless networking The review unit shipped with 248 MBs of RAM, a 1 GHz Centrino Processor and a 40 GB hard drive The units lack any kind of optical drive, no CD, CDR or DVD in these diminutive units If you plan to install software, you will need to network to another computer with a drive, buy an external unit, or live with downloads Dynamism sells a separate USB 2.0 CDR/CDRW/DVD drive for $US 399

The 8.9" XGA wide screen is bright and small but functional The small size means most web pages will fit across the screen, but you will be scrolling down more often

Where things get a little dicey is around the 16mm key pitch keyboard. I found that the keyboard was border line too small When I first tried it, I was reduced to hunt and peck because the keys are so small I found the Back Space key was particularly hard to differentiate from the Delete key

Another dimension of the computer's small size is how it handles in various situations A common use of a notebook in my house is to read the news before getting out of bed on a Saturday morning. The Inter Link is almost too short to work with the computer propped up in bed It has a very short area below the keyboard On a larger notebook, I can balance the weight of the notebook in my wrists when I type. With the Inter Link there is nothing to rest my wrists on

That said, the unit is so light, that it changes the formula in your mental calculation about whether to take along a computer It starts to approximate the size and weight of a PDA, but this little sub-notebook will run any software that runs on Windows XP

According to the Dynamism.com website, the internal battery life is only 90 minutes, but an optional add-on cells can extend the runtime to 5 (small cell) or 9 (large cell) hours The 5-hour configuration that they shipped with the demo unit only added about 250 grams to the whole unit. A stand-alone battery charger was also included

The 802 11 worked like a charm once I discovered the dip switch on the side of the unit that turned Wi-Fi on or off to conserve power. This is a handy feature to preserve valuable battery time when you don't need to be connected to the network

The built in mouse replacement is the dreaded pencil eraser stuck in the middle of the keyboard IBM convinced the world that the 'Pointing Stick' was a good thing to do, but I dislike them intensely and find them very slow to work with A track pad would have been far superior To work quickly, you will want a mouse, but this defeats the purpose of high portability if you have to plug things in to get it to work the way you want

Having no CD or DVD drive in the Inter Link makes installing software tricky You will need to buy a separate USB device (a $30 USB memory stick will do or an external CDRW) or plug into a network and mount a networked computers CD drive.

In addition to Wi-Fi, the Interlink has integrated 2 USB 2 0 ports and an iLink or Firewire IEEE 1394 to presumably do video editing It is a small screen to be moving around in a video editing program There is also a VGA out port that requires a dongle Included are standard items of a 56K flex V90 modem, an Ethernet connection, and one Type II CardBus slot

Software

The unit I received had no additional software installed other than the basic Windows XP Professional.

I installed Microsoft's Movie Maker to try out the iLink/Firewire

Continue on page 18

X'mas Stocking Idea

Blaine Cook

Notebook Multi-Function Stand

Expia Technology-Int l's line of multi-function notebook stands help prevent harmful clutter that can accumulate in notebook working spaces, increasing user productivity The NB-102PH's aluminium frame acts as a passive heat sink, and integrates a 4-port USB hub and two fans for maximum air-flow. In Vancouver's cold winter, the extra noise generated by the fans is probably not worth the heat dissipation. Come summer, though, stove-like laptop owners may want to look into their options for keeping their portables cool.

Contact Info www.expia.net / 604-805-9967 / Kevin@expia.net

3-in-1 MP3 Player, USB Flash Drive, and Digital Voice Recorder - $170

When this little MP3 player landed on my desk, I was intrigued by just how small media devices have become. The 256MB drive mounts seamlessly, if a little slowly, on Windows and Macintosh computers, and has a very simple file system interface for copying files. This gadget works mostly as advertised, although I do have a few gripes with the controls, which tend to be "sticky" and counter-intuitive (for example, the forward and back toggle works opposite to the way you expect) Switching modes from MP3 player, to recorder, to voice playback, isn't as easy as one would expect. Definitely not an iPod killer, and a bit too big to replace my 32MB flash drive. However, for $80 more than a standard 256MB USB flash drive, it's not a bad deal. Contact Info. www.daiwa.net / 604-244-9912

Stremlight Stylos Micro LED Flashlight - $30

This micro flashlight represents the next generation in emergency cupboard clutter, soundly ousting the maglight, the $5 dollar store special, and the trusty emergency candle as contenders for first place in the breaker-search 100m The light is powered by three AAAA (yes, that's four A's!) batteries, and has a single 'white' (slightly bluish) LED light. The casing is tough, and large enough that you don't need to worry too much about misplacing it. The brightness is quite good for indoor use, though I wouldn't want to use it as my primary flashlight for camping Contact Info· www.expia.net / 604-805-9967 / Kevin@expia.net

Fido's GPRS Wireless Internet PC Card

The Novatel Merlin Wireless G100 PC Card from Fido provides wireless internet access for busy people on the go. The card comes with a driver cd and a simple user guide. Installation and configuration of the card is a breeze. Following the user guide, every step of the installation is provided with a screenshot. Once installed, all the user has to do is load up the program and click connect to start surfing. Connection speed is equivalent to a 56Kbps modem, so people who are used to surfing on broadband might have a slight difficulty adjusting to the slower download speed. Nevertheless, the PC Card serves its purpose, reception was good, signal strength never dropped below 50% and I never got disconnected. Websites that are light on images and flash movies will have no problem in download speed.

If you are on the road a lot, need constant internet access and equipped with a laptop, this PC card is for you. I used it to send instant messages between friends, check email and get real-time stock quotes in the morning. It is really convenient especially in areas where WIFI is not available. Coverage includes most populated areas of Canada and major centres of the United States. Fido service plans for the GPRS wireless internet range from $5/month with 500kb of data for the light email user to $50/month with unlimited access for all you can surf. The PC Card retails for $300 from Fido with 1st month free for new activation.

Contact Info: www.microcell.ca / 604-601-1054

Tiny Perfect Computer Flawed

Continued from page 16

capabilities with some digital video. The software recommends a 1024 x 768 screen resolution for best results. The tiny screen actually has a screen resolution of 1024 x 600 pixels, which confuses Movie Maker. That software suggests the computer is set to 800 x 600 resolution. In fact the unit only has to options - 1024 x 600 or 800 x 600.

I was able to run the software at a surprisingly reasonable rate. Working with the sample files, I found that adding filters and transitions was snappy as was exporting video. Unfortunately, the unit has a small end (4- pin) Firewire cable going into it, and all my cables are large (6-pin) to small (4-pin), so I was not able to test video import. These cables seem to be scarce at retail and the unit doesn't ship with any Firewire cable.

To test the sound quality, I downloaded a copy of iTunes for Windows. A great feature of iTunes is that the play lists from other computers on my home network running iTunes immediately show up in iTunes for Windows. It is then possible to listen to these songs streamed from other computers, without downloading any MP3s directly on to the computer. I also tried some Windows Media Files to test the sound. The conclusion is the speakers on the Inter Link are very tinny – tinny-tiny speakers. It sounds like a battery-powered AM radio with bad reception.

There is a microphone-in port, but the computer does not seem to have a built in mike on the unit. This seems a strange over site given the demographic of high-powered executives who might buy this unit. Voice notation would be an obvious use for the unit. As it stands one would have to carry a separate mike and plug it in.

Conclusion

I wanted to like this unit because it is so close to my idea of the right size for a small computer. I was initially enamored with PDA-sized devices such as the Palm, the Psion and Apple's Newton. Unfortunately, my love faded because I was always coming up against the wall of not being able to run the software that I really want to. For the money though, I find the JVC Inter Link limited. I believe the manufacturers could have gone a little larger and a little heaver and had a much better unit. Adding decent speakers, a microphone, a track pad and a bigger battery for longer battery life and I would be a happy man.

As I typed more on it, my word rate came back up, so it is hard to say whether long term one could get used to a keyboard of this size. I still stumble on the arrow keys and the Delete Backspace keys. If one were motivated enough, I suppose one could adapt. After all, there are all those people out there typing emails with their thumbs on Crackberries.

On the plus side, the Inter Link certainly feels fast enough for tasks like email, web browsing, Word and Excel document perusing and short movie creation. It has a good size hard drive, a nice screen and I am getting used to the keyboard, having written my entire review on it. If you have lots of money, a love of gadgets and can put up with it's shortcomings, the Inter Link is an interesting piece of engineering. You might also check out some of the other unites that Dynamism offers that Panasonic looks kind of interesting.

Douglas Alder was the founding editor and publisher of the now-defunct publication The Computer Paper. Apparently people don't care about computers anymore, they just want to buy digital cameras and computer-controlled toilets, but he isn't bitter. In his spare time, he does FileMaker consulting and database development as HomeBase Internet. www.hbase.net

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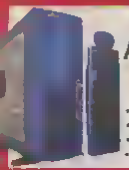

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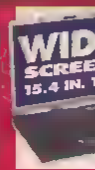

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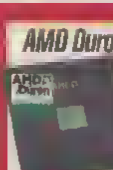

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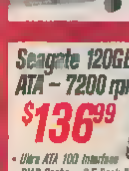

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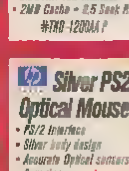

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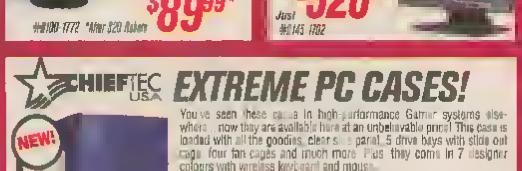

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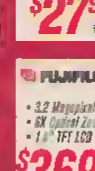

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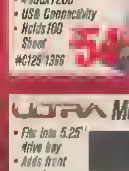

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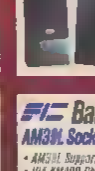

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Silent PC

Mike Chin

Product:	Frontier PC Value Silent System
Manufacturer:	Frontier PC Vancouver, BC, Canada
Price:	CA$777 (at time of publication, without OS)
Contact Info:	www.frontierpc.com / 604-739-8060

The trend towards quieter computers had its genesis in Europe and is probably best developed there, with standards and regulations established by many enlightened government agencies. The US follows next, due to the sheer size of its market, rather than any progressive noise regulations. Canadian regulations follow the US "lead" and our market is proportionately smaller, but there are some signs of responsiveness to market demand. (Surely we can hear the noise as well as everyone else!) Many Canadian computer stores sell quiet PC components from Zalman, Seasonic, and others. Very few offer complete prebuilt PC systems, however.

Frontier PC in Vancouver, BC is one of the rare exceptions. This long established brick-and-mortar store offers a growing range of quiet components as well as complete mid-tower systems based on either Intel or AMD processors. They also sell them at their online store, with configurations that can be customized by the buyer. FrontierPC says their target for quiet computers is under 30 dBA at 1 meter distance from the front panel, and most of their configurations range around the 25 dBA mark in idle or light use.

While this noise spec is not in the championship class reached by a tiny number of fanless systems (such as the Hush Mini-ITX), it is substantially quieter than the average white box systems, which range 35~50+ dBA at 1 meter. Being based around Intel or AMD processors, Frontier PC's silent models are also substantially more powerful than VIA Mini-ITX based systems (such as the Hush Mini-ITX) and compare favorably in performance against conventional boxes.

Frontier PC supplied a sample of one of their quiet systems for review. One they describe as a Value System meant for general home or office computing. The details of this system are as follows.

- Chenbro Gaming Bomb Xpider case
- Asus A7V8X-X AMD ATX motherboard, VIA-KT400 chipset
- AMD Athlon XP2500+ (Barton) processor 333FSB 640K Cache

- Kingston DDR 256MB 400MHz PC3200
- Samsung SP0411N 40G IDE 7200RPM hard drive, 3-year warranty
- Seasonic SS-300FS 300W ATX12V power supply
- Arctic Cooling SS4TC CPU heatsink/fan
- Arctic Cooling Case Fan Pro TC
- AOpen GeForce 4 MX440-SE 64M DDR w/TVout
- LG 48X CD-RW / 16X DVD-ROM combo drive
- OS options, fully installed: Windows XP Pro, $200; Windows XP Home $130

The sample was delivered with Windows XP Pro installed.

All of the components are value products. That is, while they don't represent current top performance, they offer very good value for money. In most cases, the performance is within ~80% of the best money can buy but at a sub-$1000 price almost any PC buyer can afford rather than the multi-thousands you'd spend on a cutting-edge machine. Most of the components are also products recommended by SilentPCReview.com, the most authoritative silent PC site in the world.

The Chenbro Gaming Bomb Xpider case which houses the system has a bold, distinctive appearance. The sample provided has a darkish blue bezel against a black finish on the metal. It is the plastic bezel that is the most distinctive aspect of its appearance. There are three other bezel color options: green, grey, and orange.

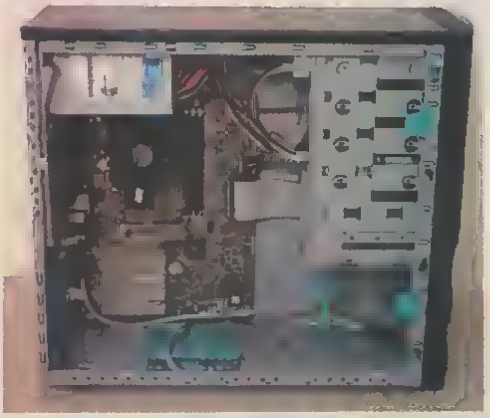
Whether you like it or not, the bezel design is distinctive

The colors are fun. But as you'll soon see, Chenbro's slightly whacky-looking Xpider case is a serious exercise in airflow optimization and tool-free user-friendliness. As minimal airflow resistance and solid construction are key to a quiet computer, the case is a good choice by Frontier PC.

SUBJECTIVE IMPRESSIONS

The Frontier Silent PC system was set up in my test lab (a small converted kitchen about 10' x 10') in a typical location for mid-tower systems: to the user's right, under the desk on the linoleum surface floor. The room has very lively acoustics, which makes it ideal for analyzing noises emitted by PCs. In a carpeted or less acoustically lively room, the overall noise level would be lower than heard in this room.

The system was connected to a Samsung 173T LCD monitor, a keyboard and a mouse. It was also plugged into my home office LAN system. Powering up the system, at least one of the fans emitted a squealing noise that was a bit alarming, even though it was not loud. I opened up the case to observe what was going on.

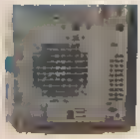


The Arctic Cooling CPU cooler and case fans, both 80mm in diameter, are thermistor controlled. Their speed is dependent on the temperature of a thermistor, a little pin-head size thing at the end of a short lead that goes back into the fan. The CPU cooling fan has its thermistor embedded in the fins of the heatsink while the case fan's thermistor hangs off an inch into the case, near the CPU.

It appeared that because of low ambient temperature, the fans were barely getting enough voltage to start, and this start-stop action was causing them to emit the squealing noise. This was early on a November morning when the furnace in the house had been off all night, so the temperature in the room was a cool 18C. I closed the case back up to see how long it would take for the fans to stabilize. In about 90 seconds from startup, the squealing noise stopped altogether, and I could see both fans spinning steadily, but slowly.

While the case was open, I also noted the very tidy arrangement of the cables, which is ideal for reducing airflow resistance and thus maximizing the cooling effect of whatever airflow is there. This helps slow spinning fans achieve very effective cooling. There are no screws needed or used for either the PCI/AGP cards or the drives, or even the side panel. And the front grill comes on and off with a positive ease that is delightful.

Both the back panel air exhaust and front panel air intake vents feature wide open flow through grills. The back vent can take 120mm fans, a very good thing, while the front can accommodate up to 92mm. The front panel design is very clever in that much of the external bezel is a wide open steel mesh that does very little to restrict airflow. The free intake airflow aspect of case design has been terribly neglected by most case makers.



Clockwise from left. Back panel with 120mm exhaust grill, front panel vent is also nice and open, takes up to 92mm fan; back side of bottom front bezel shows foam filters behind open grill intake to trap dust.

The overall noise at idle was very low, and the hard drive could not be heard at all even as the operating system was being loaded from it. The low hard drive noise can be attributed to two factors:

- The wise choice of a Samsung 40G 7200 RPM hard drive, which is naturally very quiet.
- The NoVibesIII hard drive suspension device, which floats (or decouple mounts) the hard drive to eliminate the noise caused by vibrations going from the drive into the case. This is a very significant cause of noise that afflicts every normally mounted hard drive. Both high frequency noise (whining) and lower frequency noise (120 Hz thrumming) are dramatically reduced by the NoVibesIII suspension device.

Because optical drives make noise only when accessed, the noise they make, even when loud, is not usually as disturbing as other PC noises. The user is more in control of the noise. The user knows it is temporary (during software installation, data transfer, a burn, gameplay) and will stop as soon as the optical disc is removed. Having said that, the LG combo drive in this system is actually fairly quiet. It has a smooth sound that's not too intrusive, and it can be reduced further by setting a limit with the Nero software on how fast it is allowed to spin (Sounds strange doesn't it? They make the optical drives faster and faster, then supply speed limiters to slow them back down so you can stand the noise...)

During several days of usage, the Frontier PC performed much as expected The noise level stayed at a quiet level, being virtually unnoticeable whenever there were other sources of noise in the room. The computing performance was very good, with speed and power commensurate to the components used in the system. It was plenty fast for any office, desktop publishing, Photoshop or web design jobs I threw at it. I am not much of a game player, but a few older ones I had on hand played perfectly fine

The latest 3D games will surely choke the modest AOpen GeForce 4 MX440-SE 64M VGA card; they all need the latest 3D VGA cards such as the ATI 9800 or the latest nVidia series to play well for a hardcore gamer. There's no reason a faster card could not perform well in this system with such 3D games. FrontierPC says that the highest performance VGA cards normally come with small high speed integrated cooling fans that are very noisy. FrontierPC eliminates this noise in their silent PCs by replacing the stock heatsink fan with aftermarket coolers such as the Arctic Cooling VGA Silencer or the Zalman VGA heatpipe cooler. Note that such mods add to the already high price of the best VGA cards, which can reach over $600!

LAB MEASUREMENTS

Noise

Using a highly sensitive laboratory-grade sound level meter in the test lab with all other noise sources turned off or eliminated at 2AM (when the neighborhood ambient noise is at its lowest), some sound pressure levels were taken at various points, all from a 1 meter distance. The ambient noise measured 14 dBA, which is very, very quiet indeed Tomb-like, in fact The low ambient level assures the accuracy of the noise readings

Mic Position	Front	Side	Rear	Top
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Max**	26 dBA	29 dBA	32 dBA	28 dBA

* Min System at idle (not sleep) or light work such as emailing, web surfing, writing text

** Max System under maximum stress using a utility called CPUBurn while the hard drive is being defragged The noise measurements are taken after 30 minutes in each state

Many readers may not be familiar with the term "dBA". It stands for decibel, A-weighted Without getting technical, let's just say that the dBA is the most widely used noise measurement unit It is a sound pressure level reading that is weighted to closely reflect human hearing characteristics. For measuring sources of noise, SPL measurements are normally taken at a specified point and distance from the source For more detailed information on noise and computers, please see my article "Noise in Computing A Primer" at SilentPCReview.com.

Here are some typical dBA readings for comparison's sake, from the above mentioned article

SPL (dB)	TYPICAL ENVIRONMENT AVERAGE	DESCRIPTION
[illegible]	[illegible]	[illegible]
20	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
60	Office [illegible]	Very noisy
[illegible]	Restaurant, Department Store, Noisiest Server PC or workstation	Noisy
[illegible]	Conversational speech at 1 meter	Clearly audible
35 - 45	Quiet office or library; Typical PC	Subdued
25 - 30	Quiet bedroom at night; Quiet PC	Quiet
20 - 25	Quiet whisper; Very quiet PC; Background in TV and recording studios	Very quiet
[illegible]	[illegible]	[illegible]
[illegible]	Sounds of internal organs	Normally inaudible
0	'Normal' threshold of hearing	Not audible

As you can see from the above table, at minimum, the Frontier Silent PC falls into the range of the quiet bedroom at night. This is very good. At maximum, the noise rises up a bit higher It's still pretty good

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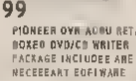

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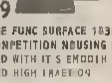

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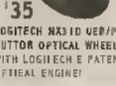

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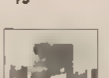

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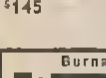

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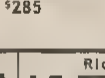

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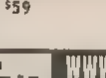

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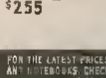

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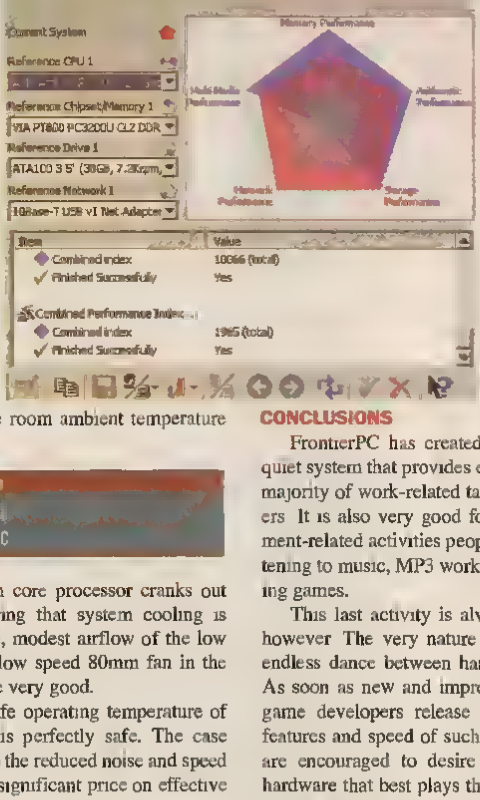
The reason noise goes up at maximum (load on system) is that the thermistor-controlled fans speed up in response to higher temperatures to ensure proper cooling. This leads us to the next set of measurements



Temperatures

These are the temperatures reported by Motherboard Monitor 5, a utility that taps into the sensors on the motherboard The CPU readings are from the thermal diode embedded in the AMD XP processor core; the case temperature is from a thermal diode embedded on the motherboard itself, near the CPU The room ambient temperature during this test was 20°C

Load	CPU	Case
Idle	[illegible]	[illegible]
Max	43°C	34°C

The AMD XP2500+ Barton core processor cranks out 68W at full throttle Considering that system cooling is provided only by the low noise, modest airflow of the low speed 80mm case fan and the low speed 80mm fan in the PSU, the temperature results are very good.

The XP has a maximum safe operating temperature of 90°C, so the measured 53°C is perfectly safe. The case temperature, too, is very low So the reduced noise and speed of the fans has not exacted any significant price on effective cooling

NOTE: When the ambient room temperature is higher, the CPU and case temperature will go up accordingly So if your summer room temperature is 30°C, you may see 63°C for CPU temp and 44°C for case temp. This is still perfectly safe

Performance

This review is really focused on the noise aspects of the system, hut some readers will feel short changed if we don't have at least a nod to the performance aspect In my opinion, with current component performance levels, virtually any computer is "fast enough" for the average user for 95% of all tasks. 3D games and specialized applications such as pro video or audio editing put special stress on various parts of the systems -- mainly the CPU, VGA card, audio card and/or the hard drive, depending on the app.

The basic platform here -- Chenbro case, AOpen motherboard, AMD XP2500+ processor, Arctic Cooling fans, Seasonic power supply, Kingston DDR PC3200 memory, and Samsung 7200 hard drive -- are all good enough to take a much higher power VGA and/or audio card that would push its performance into a more serious category.

Some benchmarks

PC Mark 2002

- CPU 5502
- Memory 3773
- Hard drive 967

Sisoft Sandra

- Combined Index 1965

There are no surprises in the benchmarks They are where they should be for a system with these components Smack dab in the middle

CONCLUSIONS

FrontierPC has created a modestly priced yet capable quiet system that provides excellent performance for the vast majority of work-related tasks people do with their computers It is also very good for the vast majority of entertainment-related activities people do on their PCs, including listening to music, MP3 work, playing DVD movies, and playing games.

This last activity is always a tough one to qualify for however The very nature of PC game development is an endless dance between hardware and software developers As soon as new and improved video cards are introduced game developers release titles that make use of all the features and speed of such cards Naturally, serious gamers are encouraged to desire both the latest games and the hardware that best plays them It will never stop, as far as I can see There's too much money in it. Frontier's Silent PC is not equipped with a VGA gaming card that will do justice to cutting edge games, but it will do fine with less demanding 3D games Anyone who is interested in more can easily opt for a more powerful VGA card

The primary selling point of FrontierPC's Silent PC is its low noise. And indeed, it is a quiet machine that will be hard to hear as a source of noise in most users' environments. I hesitate to validate the claim of silence, but 23 dBA at meter from the front panel is pretty good. If one uses the trick of applying a large pad of sound absorbent material on the back wall behind the PC to reduce the noise from the rear, it would certainly be inaudible in most circumstances.

FrontierPC says their higher priced models offer similar levels of noise -- with more features and greater performance Their philosophy is that low noise should be available for those who only email and web surf as well as those who battle aliens in virtual landscapes (gamers). Their offering is a much needed addition to the Canadian computer marketplace

Book Review

If you are a professional Web designer, especially if you have been doing it for more than a couple of years, you have undoubtedly found yourself butting your head trying to get code that you know should work render the way you intended it in multiple browsers. Chances are that once you've got things sorted out and things look great in browsers A and B – often with a kludge or two thrown in – then somebody comes along and points out that things don't look quite right in browser C. You end up coding only to having to re-code everything later. If you are looking for a way out of this vicious cycle of endlessly-kludged code, and want to know how we all got to this original state of affairs, then you ought to check out Jeffrey Zeldman's Designing with Web Standards.

Jeffrey Zeldman has the deserved reputation of being one of the best-known web designers out there. His www.zeldman.com Web site is regularly read by most serious Web designers, as is his articles on A List Apart. He was also one of the founders of influential Web Standards Project. This new book does not disappoint. He is a clear and outspoken writer, and while his style sometimes betrays more 'tude than is necessary, he drives his points about using Web Standards for current and future Web design.

The first part of this book could be called the sad history of non-standard Web design, or as he puts it "99.9% of Websites are obsolete". He states what many Web designers have begun to understand – Web sites built to old design standards, using layout that mixes form and content, as well trying to tailor results around browser quirks creates Web sites that are beginning to fall apart when seen in newer browsers. He also talks as to how it is getting harder as a result to code pages effectively and efficiently. His answer to the growing problem of pages that are fraying at the edges? Web standards. While the solution of designing pages using clearly separated structural, presentation and behavioral elements is not new, Zeldman shows how the time has come to make it a practical reality.

The focus of this book is not so much on theory, but on practice. Zeldman has plenty of experience in both areas. Explaining in detail not only how things ought to work, but how to make them work in light of numerous browser quirks. These are explained in detail, and the book provides some of the clearest explanations I have seen on the whys and hows behind browsers that improperly render otherwise good, standards-based code – and more importantly, how you can make them work. A lot of this knowledge has not come easy – for example, there's the story of how the first table-less columnar Web page layouts relying on CSS took the combined efforts of three recognized experts to make it work, or how the !DOCTYPE switch came to be, and how standard font sizes were bumped up from a near-unreadable 12 pixels in height to 16 pixels. He also does a good job of wading through the complexities of making Web sites fully accessible to all, and walks through the process of converting a Web site to full standards compliance.

The only real downside of this book is the occasional snarkiness and occasional clipped arguments. For example the section where he looks at Frames and Applets with respect to accessibility is this: "Just say no". I can understand where he is coming from, and the book makes it clear that getting browser manufactures and Web designers to think seriously about using acknowledged Web standards has been an uphill battle, but that sort of argument isn't going to wash with a manager who may have once been told that an expensive, custom-made Java applet was the only way to do a certain job. Zeldman doesn't show much sympathy for those who have not already picked up on the Web Standards mantra - so occasionally there's more 'tude than substance.

This does not overshadow the fact that this is an excellent book. Easily the best yet written on the topic, and the most comprehensive. Anyone endeavouring to code with Web standards in mind will want a copy of it. The book will easily pay for itself in terms of the practical tips and the less frustration you will encounter – now as well as later – when designing a site using a Web standards approach.

RATING:

Information content: *****

Readability: ****1/2

Intended for: All Levels

Overall Rating: ****1/2

Contact: Pearson Canada 417-525-0068

By Geof Wheelwright

Inside the bubble

The following is taken from an upcoming book by PerformancePC Executive Editor Geof Wheelwright – called Inside the Bubble - about his experiences in the "dot com" industry between 1999 and 2001. Chapter One was featured in the October issue of Computer Pro and is still available online at. http://www.computerprocanada.com/oct_insidethebubble.htm

Chapter Three - Inside the bubble

When you spend your whole life writing about other people and what they are up to, it is sometimes a little hard to pull back and remember that you also have to think about what you are doing - in the here and now. That's what I discovered in July of 1999.

After two decades of writing about everyone else, I was now in a position to start DOING. That meant coming up with strategic plans, hiring people, creating budgets, looking at partnership agreements, writing press releases, creating advertising, talking to investors, planning an information technology infrastructure that could handle the hugely ambitious Web site we wanted to create - and understanding what it was that we were doing.

For someone who had spent most of the previous 20 years quietly toiling away in front of a computer screen arranging nouns, verbs, pro-nouns, adjectives, adverbs and prepositions, this was a daunting task. But I jumped into it with relish and enthusiasm, despite experiencing a high level of confusion.

I felt rather like Alice walking through the looking glass and into another world. It was a world I had seen in glimpses for many years - and thought I understood - but it was quite different once I was there.

Some months later, I would come to understand what this world was really all about. The period in which I joined this industry became known as "the Internet bubble" - and we all known what happened when it eventually burst. So for me this moment was as much about entering another world as it was going inside the Internet bubble.

Now there are a lot of interesting things about being inside a bubble. If you really lived inside a bubble, you wouldn't see the world completely clearly - it would be filtered through whatever material the bubble was created from. You might also find the air a little hard to breathe at times. You could sometimes find it a little claustraphobic. And, when you realized you were in it - and that it was floating several miles above the ground - you would be gripped by a fear of what would happen when the bubble finally burst.

In July of 2000, however, I had no idea that I was entering a bubble. I just thought that the world was changing and that I had been given a chance to be a part of that change ▶

64-bits on your desktop
Continued from page 12

are paying a $200 premium for the small amount of performance you gain over Intel's Pentium 4 3.0GHz, or $150 more then the Barton 3200+.

Besides the extra money, you're investing in a brand new chip and a brand new motherboard, and both may have kinks that need to be worked out. Especially in the case of a brand new CPU, it usually seems to be a good policy to wait for the 2nd version of the chip; in the intervening time the price will come down, any bugs should be caught, and there may be a dramatic increase in performance.

Waiting for the release of Windows XP 64-bit Edition for the Athlon 64 may also be worthwhile. The new OS may improve the performance of applications, just by reducing the overhead of running Windows, as it takes advantage of the extra 64-bit registers. Once Windows 64 is in place, 64-bit applications will be set to go.

Of course, with a Athlon 64 on your desk, you'll have one of the best performing desktops on the market, and mad bragging rights – you may find geeks gathered around the sleek black case, worshipping it in a manner reminiscent of the opening scenes of "2001. A Space Odyssey".

Aside from the processor, all of the components in the system are solid, top end parts, and the system is wrapped in such an attractive package. If you are willing to pay for the best, you won't have any complaints with the performance of the system, and you'll be all set for the 64-bit revolution – if and when it comes ▶

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If you meet these criteria and are interested in this opportunity please send your resume in word format to the email address below.

Contact Information
Ryan McElgunn
Technical Recruiter Onsite/Aerotek Contract Engineering
Rmcelgun@aerotek.com

Senior Web Developer

TEKsystems is currently seeking a senior web developer to join their North American development team. You will work on high profile/high traffic web sites that support large eCommerce environments. This candidate will be working in a fast paced, rapid web development environment that will help enhance existing online offerings and be an integral part in developing new ventures. This is a large working environment with the latest .Net technology and high-volume websites.

Qualifications
- Computer Science Degree or equivalent experience
- 4+ Years of Internet application development experience, minimum 1 year project lead experience
- Microsoft Development experience with the following are mandatory: Video Studio, Visual Basic, Visual Interdev, Visual Source Safe, Visual Studio.Net
- Windows NT 4.0/2000, IIS 4.6.0, ASP.Net
- Strong SQL Server 7.0/2000 skills: database design, administration and programming
- Excellent interpersonal skills
- Application development and leadership in a team environment
- Project management

This will be either a long-term contract or permanent position.

Contact Information
Marco Citton
Technical Recruiter – TEKsystems
Mcitton@teksystems.com

Component	Fly Computers	HP	Intertech OA (p.17)	MBS (p.25)
CPU	Intel P4 2.0GHz	AMD® Athlon™ XP processor 2800+ (2.08GHz)	AMD 2500XP	AMD 2500XP
Motherboard	ASROCK-M266A	Not listed	Soyo KM45N	SOS A748X
Ram	PC3200 256M DDR	512MB PC2700 DDR SDRAM Memory (expandable to 2GB)	512meg DDR-400	512Mb DDR400
I/O Ports		Front access panel [illegible] ie card reader 5 USB 2.0	4 * USB 2.0 serial,par	6 * USB 2.0 Serial Par
Lan	on board Lan	Integrated 10/100Base-T network interface		
Video Card	on board video	NVIDIA® GeForce4™ MX graphics with 64MB allocated video memory	Sparkle 32meg 8x	Aopen GF4 MX-440 64Mb
Monitor	Benq 17"	n/a	Optional	MAG 17" CRT (0.27dp)
Hard Drive	40G 7200rpm HDD	120GB Ultra DMA hard drive	Free Half Life 2 game	Seagate 80GB 7200rpm
Optical Device	52x cdrom 144M FDD	CD-RW 48x24x48	Maxtor 80G 8mg cache Liteon 52x/32x/52x	Aopen 52x32x52x CDRW
Sound Card	on board audio	Integrated AC '97	Built-in Sound card	Built-in Sound card
Speakers	included	speakers sold separately	580w w Subwoofer	Aopen MS-810 (2pc & Sub)
Printer	Epson Photo 820S	n/a		
Scanner	ACER 4300U 1200x600 36bit Color USB	n/a		
Case	17" P4-300 ATX Tower case	Not Listed	Midtower 350w	Tower w/ 300W P/S
Extras		n/a	Case fan	9cm Case Fan
Mouse	included	PS/2 scroller mouse	Optic A Mouse	Microsoft Optical Mouse
Keyboard	included	HP multimedia keyboard	win 98 keyboard	Microsoft Multimedia Keyboa
Software	Windows XP Home Edition	Microsoft® Windows® XP Home Edition	Windows XP Home	Windows XP Home
Warranty		1 year limited warranty and technical support	2yr1yr on CD keymous	1yr 3yr on MB CPU Mon
Price	$841	$989.00	$995	$975
Shipping		$40.00		
PST	$70.58	$74.93	$74	$73
GST	$65.87	$69.93	$69.65	$68.25
URL	www.flycomputers.com	http://shopping.hp.ca/	www.intertechpc.com	www.mbscomputers.com
Phone	(604) 321-8795	1-877 231-4351	604-872-7337	604-572-8722

Calendar of Events

Want to have your Association and User group Events listed Here?

BC TIA's Breakfast Seminar
5 Key Principles for Regaining Control of Your Projects
Thursday January 15 2003
Hyatt 655 Burrard St
7:30 am Registration & light breakfast
8:00 am Presentation
9:00 am Close
Members $ 25 + GST
Non members $ 45 + GST
Visit www.bctia.org or call 604-683-6159

BC TIA's CEO Roundtable US VC's Investing in Canada
Thursday January 29th 2003
Hyatt Regency Hotel 655 Burrard Street
7:30 am Registration & light breakfast
8:00 am Presentation
9:00 am Close
Members $ 25 + GST
Non members $ 45 + GST
Visit www.bctia.org or call 604-683-6159

BC TIA's CFO Roundtable 2004 Outlook for Technology Company Financings
Thursday January 15th 2003
Sutton Place 845 Burrard Street
7:30 am Registration & light breakfast
8:00 am Presentation
9:00 am Close
Members $ 25 + GST
Non members $ 45 + GST
Visit www.bctia.org or call 604-683-6159

Alienware & Falcon does not have system under 1K

Sonex Computer (p.13)	Sony
Celeron 2.4Ghz	Intel Pentium 4 2.4 GHz
[illegible]	not list
256MB DDR 333	256MB PC-2100 266MHz DDR
1 Parallel 1 Serial	
[illegible]	[illegible] USB 2.0 (two front/two rear)
	10Base-T/100Base-TX Fast Ethernet
[illegible]	845GV
[illegible] Samsung 75 [illegible]	n/a
[illegible]	80 GB Standard
LG 52X CDRW	CD-RW IDE CD-ROM
[illegible]	Integrated Sound card
Altec Lansing [illegible]21	Stereo speakers
[illegible]	n/a
HP 3677 SCANJET	n/a
[illegible]	Tower
[illegible] Window / Fan	n/a
[illegible]	Not Listed
Microsoft Internet Mouse	Not Listed
[illegible]	Microsoft Windows XP Professional
1 Year Limited Warranty	1 year
[illegible]	US $699.99 (CDN $944.99)
EXTRA	US $25.16 (CND $33.97)
[illegible]	
[illegible]	
[illegible]	www.sonystyle.com
[illegible]	1-877-865-7669

Email events@performancepccanada.com or fax to 604 638 0666

Calendar of Events

Vancouver Technology User Group
Regular VANTUG General Meetings are scheduled on the third Wednesday of the odd numbered months and are held at the Microsoft Offices in downtown Vancouver. Pre-registration required for all meetings.

6.30 pm Wednesday 21 January 2004
Suite 1100 - 1111 West Georgia Street (at Thurlow)
More info: http://www.vantug.com

Vancouver Java user group meeting
Monday January 13 2003
BCIT Downtown Campus
556 Seymour St.
Room 282/284

Introduction to Java(TM) Data Objects
Persisting objects has been a major challenge from the day we have created objects. There are many methods of persisting objects such as using Object databases or using Object Relational mapping. The Java Data Objects specification addresses these issues in a more efficient way by providing APIs for transparent database access. With this revolutionary technology programmers can write pure Java code to access the underlying data store without writing any database specific code. It is up to the vendor how they will implement the JDO interfaces.

Any questions about this event (or any others) can be sent to owner-jug@openroad.ca

Component	Fly Computers	HP	Intertech OA (p17)	MBS (p 25)
CPU	AMD XP2500+	Intel® Pentium® 4 processor (2 66GHz)	Intel P4 3 0Ghz Hyperthread	Intel P4 2 66Hz Hyperthread
Motherboard	ASUS A7NBX-DX Nforce2	Not listed	Gigabyte 8PE1000Pro 2	ASUS P4S800 Motherboard
Ram	512M PC3200 512M DDR400	512MB DDR(Double Data Rate)SDRAM (expandable to 4GB)	1G DDR-400 dual channel	2 x 512Mb DDR400
I/O Ports		Front access 6-in-1 media card reader	8* USB 2.0, serial, parallel	8* USB [illegible] parallel
Lan	10/100 Lan	Integrated 10/100Base-T networking interface	10/100/1000mb/s	10/100mb/s
Video Card	Nvidia Fx5800 AGP8X 128M DDR VIVO	128MB DDR ATI Radeon(R) 9200 with TV-out	ATI 9600XT 128mg 8x	Asus V9F FX5900 VIVO 256Mb
Monitor	Samsung 15' 151S LCD	17' flat panel LCD monitor with Harman Kardon speakers	Optional Free Half Life 2 Game	MAG 15' TFT Flat Panel
Hard Drive	80G 7200rpm HDD,1 44M FDD	120GB Ultra DMA Gigabyte(GB)	Maxtor 120G SATA 8mg each	Seagate 120Gb 7200rpm 8Mb Cache
Optical Device	16X DVD ROM 52X24x52 CDRW 1 44M FDD	48x max hp CD-Writer Drive (48x24x48x)	Lteon DVD/CDRW combo	LG DVDROM Drive (Black) LG DVDR/RW Drive (Black)
Sound Card	on board sound	Integrated AC-97	Built-in 6 Channel sound Altec Lansing ATP-2	Built-in 6 Channel sound Edifier R451 (5pc 6-Sub)
Speakers	750w Speaker System with Subwoofer	KLIPSCH ProMedia 2 1 Speakers		
Printer	Canon i450 2400x1200dpi BubbleJet	n/a		HP Deskjet 3550
Scanner	ACER 5300 U 2400x1200 48bit USB	n/a		
Case	18' 350w ATX Tower Case	Not Listed	Midtower 500w Dual fan	21" tower w/300W PS (Black/Silver)
Extras		n/a	Case fan side Window	8cm Case Fan
Mouse	Logitech Optical Wheel Mouse	HP optical scroller mouse	Microsoft Optical	Microsoft Optical Mouse (Wireless)
Keyboard	Logitech/MS Internet Keyboard	HP multimedia keyboard	Microsoft Multimedia	Microsoft Multimedia Keyboard (Wireless)
Software	Windows XP Home Edition	Microsoft(R) Windows(R) XP Professional Ed.	Windows XP Home	Windows XP Home
Warranty		1 year limited warranty, and technical support	2yr 1yr on CD key Mouse	1yr 3yr on MB CPU Mon
Price	$1,995	$1,999 00	$1,639	$1,899
Shipping		$40 00		
PST	$149 63	$149 93	$122 93	$140.18
GST	$139 65	$139 83	$114 73	$130.23
URL	www flycomputers com	http //shopping hp ca/	www.intertechpc com	www.mbscomputers.com
Phone	(604) 321-8795	1-877 231-4351	604-872 7337	604-572-8772/2604-572-8772

Sonex Computer (p.13)	Sony	Alienware	Falcon
Intel P4 2.6Ghz 800FSB	Intel Pentium 4 2.6 GHz 512 KB cache	AMD Athlon™ XP Processor 2800+	AMD AthlonXP 2800+ 333 FSB Processor
ASUS P4P800 MB	not list	ASUS A7N8X Deluxe NVIDIA® nForce2™ Ultra 400	Asus A7N8X nForce 2 Motherboard 1AGP 5PCI
2x256MB Dual DDR400	512 MB DDR SDRAM 333 MHz DDR333, PC2700	512MB DDR SDRAM PC-3200	512MB PC2700 DDR Memory
1 Parallel / 1 Serial	Four USB 2.0 (two front/two rear)	Not listed	Not listed
On board 10/100/1000 Lan	Network adapter PCI Ethernet Fast Ethernet	Not listed	3COM V.90 PCI Modem Or Optional 10/100 Network
Radeon 9600Pro 128MB AGP	AGP 8x ATI RADEON 9200 128 MB	NVIDIA GeForce™ FX 5200 Ultra 128MB 8x AGP w/DVI & S-Video	ATI Radeon 9600 PRO AGP8X 128MB
17" SAMSUNG 173S LCD	n/a	n/a	n/a
Seagate 120GB SATA HD	120GB standard DMA/ATA 100(Ultra)	80GB Seagate Barracuda 7200.7 Serial ATA 8MB Cache	120 GB Hard Drive SATA 7200 RPM
LG 52X CDRW	DVD±RW DVD-ROM	16x DVD-ROM Black w/Software MPEG 2 Decoder	16X Toshiba DVD (48x CDROM)
On Board 5.1 Sound	Integrated Sound card	Creative Sound Blaster® Audigy 2 6.1	not listed
Logitech Z640 5.1 System	n/a	not listed	n/a
	n/a	n/a	n/a
	n/a	n/a	n/a
18" Raidmax Gaming Case	Tower	Alienware Full Tower Chassis (420-Watt PS)	Mid Tower Case + 300 Watt Enermax PS
Side Window / 420W PS	n/a	AlienIce™ Video Cooling System	n/a
Microsoft Optical Mouse	Not Listed	Included	Logitech Optical Wheel Mouse
Microsoft Internet Mouse	Not Listed	Included	Logitech Internet Keyboard
Window XP Pro	Microsoft Windows XP Home Edition	Microsoft® Windows® XP Home Edition	Microsoft Windows XP Home System Recovery DVD
1 Year Limited Warranty	1 year	1-Year Phone Support with Onsite Service	1 year parts and labor
$1,875	US $1417.17 (CDN $1,913.18)	CAD $1,998.00	US $1285 (CDN $1746.25)
EXTRA	US $25.16 (CND $33.97)	Free	Extra
$1481.3			
$138.25			
http://www.sonexpc.com	www.sonystyle.com	http://www.alienware.com	http://www.falcon-nw.com
604-717-6111	1-877-865-7669	1-800-AlienWare	1-800-Falcon 1

Want to have your Association and User group Events Listed Here?
Email events@performancepccanada.com or fax to 604.638.0666

Calendar of Events

PHP Vancouver Conference
Hear from the experts in the PHP developer community about PHP innovations and business applications. More info: http://vancouver.php.net

Who will attend?
- Developers
- ISP owners
- System Administrators
- Chief Technical Officers

What is PHP?
- Server side scripting language for rapid web development
- Open source, excellent code performance with widely extensible features
- Used on over 14 million domains world wide (source: Netcraft)

How can I help?
- Attend the event on January 22, 23rd 2004
- Tell all your friends and coworkers about this conference

Who is speaking?
Keynote speech is the co-inventor of PHP, Rasmus Lerdorf as well as other major players of the PHP core development community, and speakers from the local tech industry

Component	Fly Computers	HP	Intertech OA (p.17)	MBS (p.25)
CPU	Intel P4 3.0 GHz 800 MHz	Intel P4 3GHz Hyperthread 800MHz	AMD 64bit 3200+	Intel P4 3.0Ghz Hyperthread
Motherboard	ASUS P4C800-E DX	Not listed	ASUS K8DVX	ASUS P4P800 Motherboard
Ram	2x215M PC3200 DDR400	512MB DDR(Double Data Rate)SDRAM (expandable to 4GB)	1G DDR-400 Kingston Ram	2 x 512Mb DDR400 (Kingston)
I/O Ports		front panel 7-in 1 digital card reader	6* USB 2.0, Serial,parallel	6* USB 2.0 serial, parallel
Lan	on board Lan	Integrated 10/100Base-T network interface	10/100mb/s	10/100/1000mb/s
Video Card	ATI Radeon 9800Pro all in wonder 128M	GeForce4 FX™ 5200AGP 8x graphics card with 128MB DDR VRAM, TV out, and DVI	Nvidia FX5600 128mg 8x	ATI All-in-Wonder 9600Pro 128Mb
Monitor	Acer AL722 17" LCD	n/a	Sony 17" LCD flat Panel	Acer 17" TFT Flat Panel
Hard Drive	120G SATA HDD	160GB 7200RPM Ultra DMA Gigabyte(GB)	Maxtor 160G SATA 8mg cah	WD 200Gb SATA 8Mb Cache
Optical Device	16X DVD/52x CDRW combo 1.44M FDD	DVD writer and CD-writer combo drive	Liteon DVD/CDRW Combo	LG DVDROM Drive (Black) LG DVDR/RW Drive (Black)
Sound Card	on board 5.1 audio	Integrated AC97	Built in 6 Channel Sound	Built in 6 Channel sound
Speakers	7.1 50w speakers w/ subwoofer	not listed	Altec Lansing ATP 3	Edifier R501 (5pc & Sub IR Remote)
Printer	Brother Laser HL-1230 600dpi	n/a		HP OfficeJet 2175 (All-in-One)
Scanner	Canon Lide30 1200x2400 dpi	n/a		
Case	18" P4 400w ATX tower case	Not Listed	Midtower case 500w Dual fan	17" Tower w/300W P/S (Black/Silv
Extras		n/a	Case Fan side window	9cm Case Fan / CPU Fan Air Guide
Mouse	Microsoft Multimedia Optical Mouse	wireless optical mouse	Microsoft Optical	Microsoft Optical Mouse (Wireless)
Keyboard	Microsoft Multimedia Keyboard	HP wireless Media Center Keyboard	Microsoft Multimedia	Microsoft Multimedia Keyboard (Wireless)
Software	Windows XP Home Edition	Windows XP Professional Edition	Windows XP Prof	Windows XP Home
Warranty		1 yr limited warranty and technical support	2yr 1yr on CD key mouse	1yr 3yr on MB CPU Mon
Price	$2,815	$2,499.00	$2,588	$2,989
Shipping		$40.00		
PST	$218.63	$187.43	$194.83	$224.18
GST	$204.05	$174.93	$181.93	$209.23
URL	www.flycomputers.com	http://shopping.hp.ca/	www.intertechpc.com	www.mbscomputers.com
Phone	(604) 321-8795	1.877.231.4351	604-872.7337	604-572.8722

onex Computer (p 13)	Sony	Alienware	Falcon
MD Athlon64 3200+	Intel® Pentium® 4 Processor 3.20 GHz	AMD Athlon™ XP Processor 3000+	AMD Athlon XP 3000+
s-K8V Deluxe	not listed	ASUS A7N8X Deluxe-NVIDIA® nForce2™ Ultra 400	Asus A7N8X Deluxe AMD 10/100
512MB DDR400	1GB RAM	512MB DDR SDRAM PC-3200	Corsair TwinX 512MB 3200LL-PT (2/256mb)
[illegible]	Four USB 2.0 (two front/two rear)	Not listed	Not listed
n board 10/100/1000 Lan	Gigabit Ethernet network	NVIDIA® DualNet® Integrated 100Mb Ethernet	Not listed
[illegible] 128MB AGP	GeForce FX 5600 with 128MB of VRAM	NVIDIA GeForce™ FX 5700 Ultra 128MB 8x AGP w/DVI & S-Video	ATI Radeon 9800 Pro 128MB AGP 8X
19" SAMSUNG 191T+ LCD	n/a	n/a	n/a
gate 120GB SATA HD	200 GB Standard	120GB Seagate 7200RPM Serial ATA 8MB Cache	HGST 7K250 80GB 7200RPM 8MB Cache SATA
G 4X +/- DVD RW	DVD+ RW / CD-RW	16x DVD-ROM Black w/Software MPEG-2 Decoder	16X Toshiba DVD (48x CDROM)
board 8.1 Sound	Integrated Sound card	Creative Sound Blaster® Audigy 2 ZS - 7.1	Creative Labs Audigy 2 PCI
Logitech Z640 5.1 System	21 speaker system with sub-woofer	not listed	n/a
	n/a	n/a	n/a
	n/a	n/a	n/a
18" Hardmar Gaming Case	Tower	Alienware Full-Tower Chassis (420-Watt PS)	ATC-201 Al Mid Tower Enermax 350W PS
Side Window / 420W PS	n/a	Alienice™ Video Cooling System	Coolermaster Socket A CPU Heatsink/Fan
Logitech MX700 Mouse	Not Listed	Included	Logitech Optical Internet Mouse
Logitech Wireless KB	Not Listed	Included	Logitech Internet Keyboard
Window XP Pro	Windows XP Media Center Edition	Microsoft® Windows® XP Home Edition	Windows XP Home
1 Year Limited Warranty	1 year	1 Year Phone Support with Onsite Service	1 year parts and labor
$2960	US $2,199.99 (CDN $2,869.99)	CAD $2,294.00	US $1,999 (CDN $2,696.65)
LXIBA	US $25.16 (CND $33.97)	Free	Extra
$928.50			
$208.60			
http://www.sonixpc.com	www.sonystyle.com	http://www.alienware.com	http://www.falcon-nw.com
604 717 6111	1-877 865-7669	1-800-AlienWare	1-800-Falcon-1

BURNABY

A-Power Computer (p 26)
3764 East Hastings St,
Burnaby, BC V5C 2H5
(604) 570-0766

BC Compusolve Inc
206-5679 Imperial St
V5J 1G1
(604) 437-6919

Compu 2000
108 3989 Henning Drive
V5C 6N5
(604) 436-2333

Elitech Computers
1693 4500 Kingsway
(604) 433-3210

NCIX com (p.2, 40)
5068 Kingsway
V5H 2E7
(604) 451-8682
www.ncix.com
sales@ncix.com

Access Computers Rentals Inc
(604) 257-3188

Alpine Computers
(604) 415-9933

Big Planet Computers
(604) 291-8853

Dexton Computers
(604) 433-9866

Labtop Computers
(604) 526-1770

COQUITLAM

Elitech Computers
201-403 Nonh Rd
V3K 3V9
(604) 931-5809

Ever Tech Computers
(604) 937-4727

F X Computers
(604) 937-3713

Mytech Computers Ltd
(604) 945-7541

Time Plus Computers Inc
(604)9 36-8171

Westwood Computers
(604) 942-0370

DELTA

Aerotech Computers
(604) 951 2376

LANGLEY

ATOP Computer
20188 Fraser Hwy
V3A 4E6
(604) 514-9130

Blue Collar Computers
(604) 882-8830

EXPIA Technology (P.34)
21314 80th Ave
Langley BC V2Y 2E2
(604) 888-5285
www.expia net
kevin@expia net

Greg's Computers
(604) 534-3887

Walnut Grove Computers
(604) 888-3873

Warpdrive Computers Ltd
(604) 888-0013

MAPLE RIDGE

Prime Time Computers
(604) 460-8655

Techquest Computers
(604) 466-6377

NEW WESTMINSTER

Am B Pc Computers
(604) 540-9222

Bits N Bytes Computers
(604) 520-1958

NORTH VANCOUVER

Acusel Com Computers
(604) 984-6247

Evergreen Computers Inc
(604) 990-3960

W S Computers
(604) 986 7680

PORT COQUITLAM

Alink Computer
118 2099 Loughead Hwy
V3B 1A8
(604) 468-0006

Luxor Computers
(604) 945-0019

PORT MOODY

Ever Tech Computers
(604) 937-4728

RICHMOND

A-Power Computer (p 26)
#101-11211 Bridgeport Rd,
Richmond, BC V6X 1T3
(604) 273-8868

Elitech Computers
160-2268 No 5 Road
V6X 2T1
(604) 303-6928

A Link ComputerSystem
170 12171 Bridgeport Rd
V6V 1J4
(604) 214-9473

Infomicro Technology Inc
106-11400 Bridgeport Rd
V6X 1T2
(604) 604-214-7703

A D Microcircuit Computers
(604) 276-2012

City Computer Systems (p.9)
#150 - 12880 Clarke Place
V6V 2H1
(604) 270-3747
www.citycomputers.com
citycomputers@telus.net

Discovery Computers
(604) 241-0412

ICI Computer
1780-4311 Hazelbridge Way
Richmond BC V6X 3L7
(604) 273 1368
www.icicomputer.com
ici@icicomputer.com

Jescom Computers Inc
(604) 276-6992

JRS Computers Inc
(604) 273-3186

LCF Advanced Technology Ltd
(604) 303-9628

Mnin Computers Inc
(604) 273-2611

MDI Internet Inc (p11)
#138 - 23981 Simpson Rd
V8X 2R2
(604)298-1080
www.mdi.ca
info@mdi.ca

Monitor King
#103 11500 Bridgeport Road
Richmond B C V6X 1T2
(604) 270-2677
www.monitorking.bc.ca
monitor@monitorking.bc.ca

PC Computers
(604) 273-9692

Sonex Computer (p 13)
Unit 140-145, 4800 No 3 Road
Richmond, BC V8X 3A8
(604) 717-6111
www.sonexpc.com
info@sonexpc.com

T L D Computers Inc
(604) 272-6000

Tai Tech Computers Systems
(604) 207-0299

Take-A Byte Computers
(604) 271 2222

Unique Personal Computers
(604) 448-0367

SURREY

Golden Top Computer
10269-128th St.
V3T 5C9
(604) 588-6538

ATOP Computer
10083 136A St
V3T 4G1
(604) 930-4838

Acn Computers
(604) 543-9296

Aerotech Computers
(604) 951-4000

G S Computers
(604) 589-3555

Stream Computers Ltd
(604) 536-8655

MBS Computers (p 25)
#110, 7110-120th Street
Surrey, BC V3W 3M8
(604) 572-8722
www.notebookcity.ca

Tri Tech Computers Ltd
(604) 534-4790

VANCOUVER

ATIC Computer
45 E Broadway V5T 1V4
(604) 875-8859

Nexigen Computers
5 111 W Broadway
V5Y 1P4
(604) 713-8538

NCIX com (p 2, 40)
1843 W Broadway
V6J 1Y5
(604) 739-9985
www.ncix.com
sales@ncix.com

FrontierPC core (p 3)
105-1755 W Broadway
V6J 4S5
(604) 739-8060
http://www.frontierpc.com
info@frontierpc.com

Intertech Computers (p 17)
4317 Fraser St
V5V 4G4
(604) 872-7337
www.intertechpc.com
reyhur@intertechpc.com

1stDataRecovery.com
745-1050 W Pender St.
V6E 3S7
(604) 681-3770

Promar Canada (p.19)
8275 Sherbrooke Street
Vancouver, BC V5X 4E6
(604) 322 1799
www.promarcanada.com

Neocode Software (p.39)
288-425 Carrell St
V6B 6E3
(604) 638-0668
www.neocodesoftware.com
sales@neocodesoftware.com

Accurate Computers
& Satellites Ltd
(604) 293-7777

Ada Computers Ltd
(604) 632-0138

Compatible Computers Inc
(604) 322-0322

Czech Computers & Service
(604) 438-4569

E Global Computers Inc
(604) 872-8276

Business Pro Computers
(604) 871-0194

Legend Computers
(604) 279-8856

Vanco Computers
(604) 732-5691

Varsity Computers
(604) 222-2326

Vastech Computer (p15)
3987 Main Street
Vancouver, BC V5V 3P3
(604) 872-4245
www.vastechcomputer.com
sales@vastechcomputer.com

TORONTO

TigerDirect.ca (p 20,21)
171 Esna Park Drive
Markham, Ontario L3R 4J1
1-800-800-8300
www.tigerdirect.ca

Directory Listing

Get your free listing, fax to 638 0666 or email directory@performancepccanada.com

Neo|Code Software Ltd.

Developer Services

Case Study: Fine Arts Engraving

Challenge

Fine Arts Engraving wanted to publish and host an application to 30,000 IBM Global Service employees around the world. After the acquisition of Price Water House Cooper's consulting division IBM had an immediate need to arrange business cards and stationeries for its large number of employees, who had just joined the corporation. Fine Arts Engraving was the company responsible for this rush yet mass project. Since all Fine Arts Engraving online-order sites are customized to each client's needs in order to manage this project, Fine Arts Engraving was looking for a developer service that could help them to design and build a custom web-based application, which will automate and simplify the order process.

Solution

As a result, Fine Arts Engraving came to Neo Code for assistance. Within 14 days, the application was developed, published and hosted. Our talented and experienced programmers wrote the program in just 7 days, and it was hosted for a week. In order to meet our client's deadline, our programmers dedicated themselves to work around the clock to have the job done in the best possible way.

Result

Fine Arts Engraving quickly opened the custom application to IBM Global Service employees worldwide. More than 20,000 IBM employees from around the world used the application to place their orders online. All orders were completed with speed and accuracy which translate into happy customers, and satisfactory services.

the Complete Package

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